

LECTURE - 2.

Date: 9/01/19

Exercise 10:-

How to make a Histogram:-

1) First find the min. and max. for the whole data set:-

$$\text{min.} = 1.9$$

$$\text{max.} = 3.4$$

2) Range find the range
 $= 3.4 - 1.9$
 $= 1.5$

4) Make no. of classes:-

No. of Sample	25	50	100	200	500
No. of classes	6	7	8	9	10

For 30 samples we use using 5 classes

6) Find the width of each class:-

$$= \frac{1.5}{5} = 0.3.$$

4) Make your ranges by adding the width to the min. value (-to the max)

[1.9, 2.2)	[1.9, 2.2)
[2.1, 2.4)	[2.2, 2.5)
[2.4, 2.7)	[2.5, 2.8)
[2.7, 3.0)	[2.8, 3.1)
[3.0, 3.3)	[3.1, 3.4)

5) Find Freq. of each class

	<u>Freq.</u>	<u>B.F</u>
[1.9, 2.2)	5	5/30
[2.2, 2.5)	4	4/30
[2.5, 2.8)	12	12/30
[2.8, 3.1)	6	6/30
[3.1, 3.4)	3	3/30

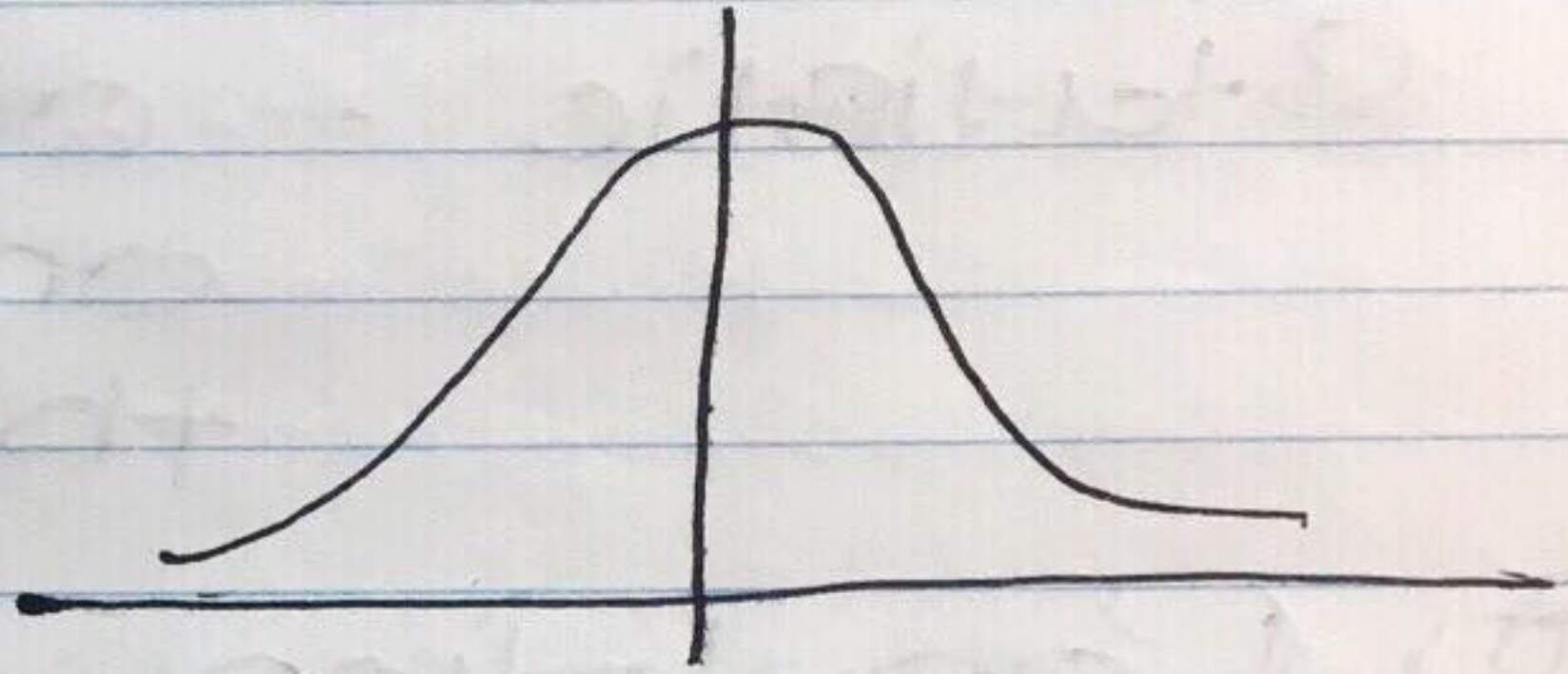
6) Find B.F (Relative Frequency)

$$\begin{aligned}
 \text{Frequency} &= \frac{\text{Range}}{\text{Class}} \\
 &= \frac{1.5}{2.2 - 1.9} = 5
 \end{aligned}$$

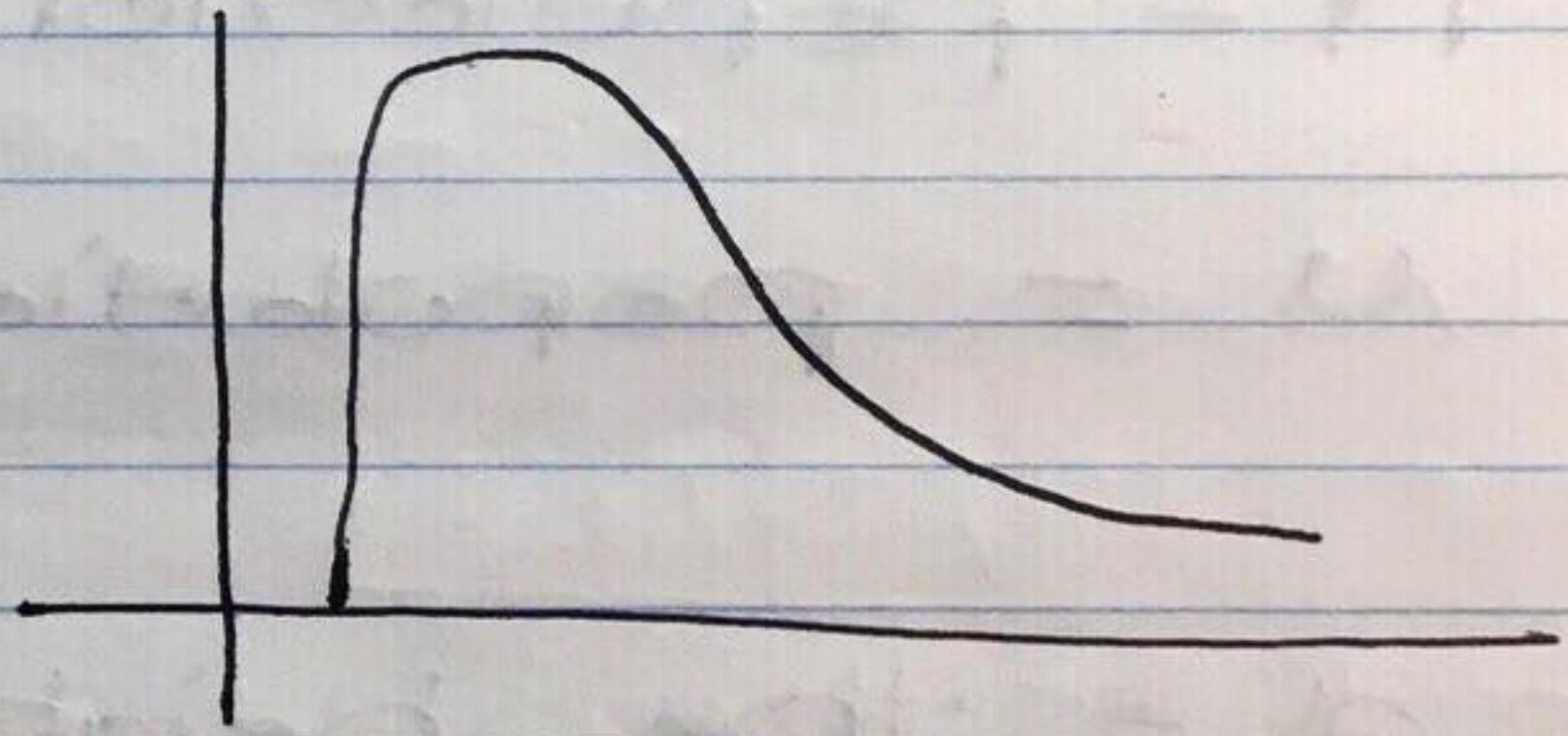
7) Draw Histogram (Frequency over class)

Shapes of graphs

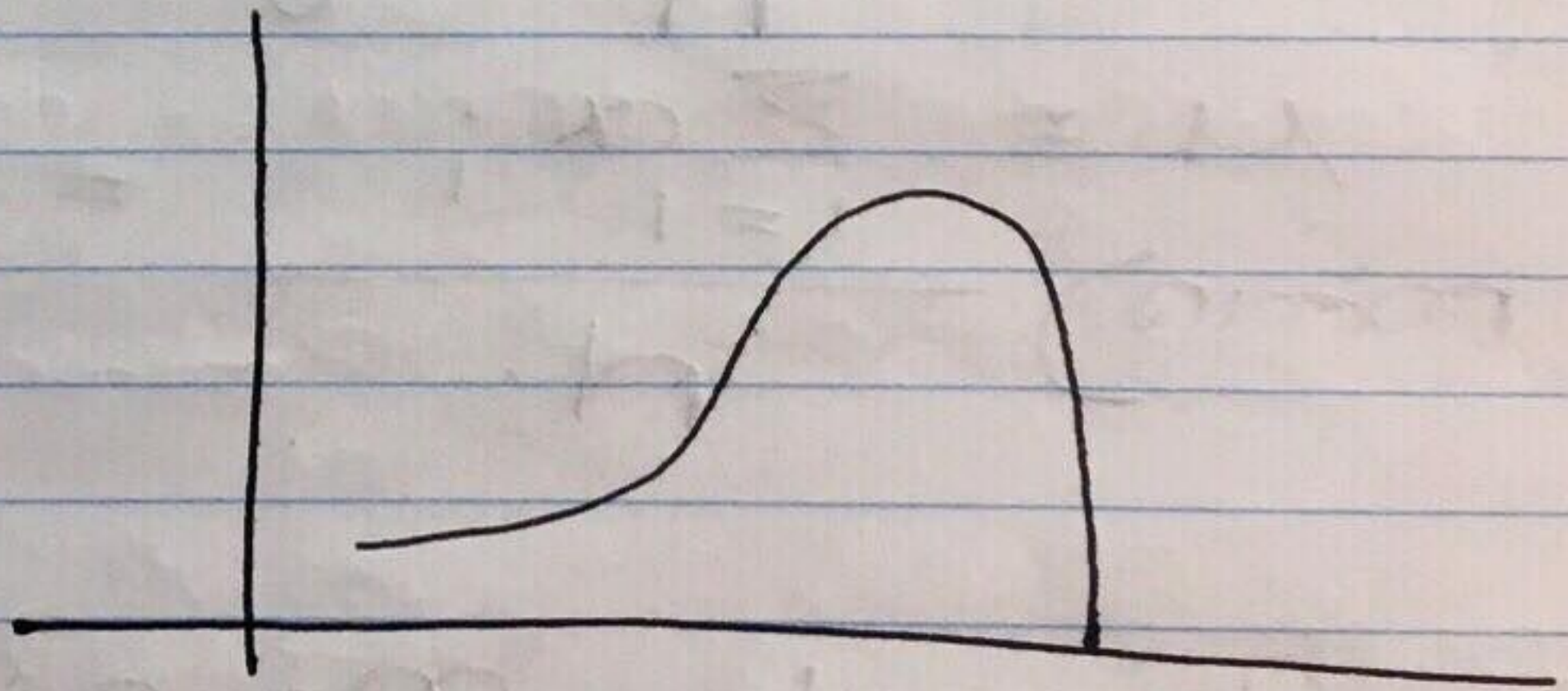
- Symmetric



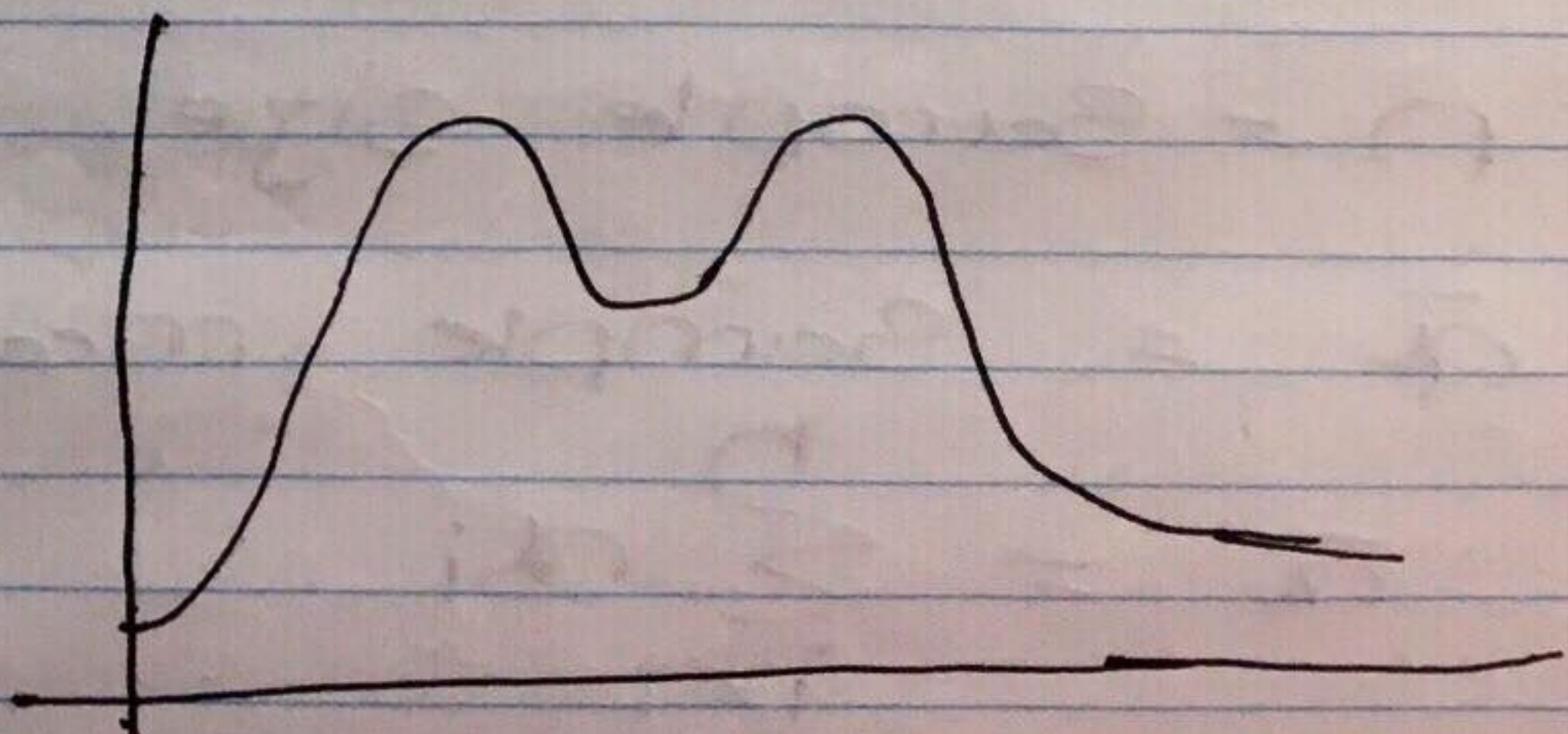
- Skewed to Right



- Skewed to Left



- Bi-modal



Chapter - 2. Describing Data :-

Parameter - obtained from entire population

Statistic - obtained from only a sample (of the population)

▣ Population Mean :-

N = population size.

μ = population mean.

x = the height of a student.

$$\begin{aligned} \mu &= \frac{\sum_{i=1}^N x_i}{N} = \frac{x_1 + x_2 + x_3 + \dots + x_N}{N} \\ \text{(mean)} \end{aligned}$$

▣ Sample Mean :-

n = sample size.

\bar{x} = sample mean.

$$\therefore \bar{x} = \frac{\sum_{i=1}^n x_i}{n}$$

B) 40, 50, 50, 55, 1065. is an outlier.

$$\bar{x} = \frac{\sum x}{n} = \frac{1260}{5} = 252.$$

due to outliers:-

- mean changes
- No change on median
- No change on mode

☞ Mean, Median Mode Comparison:-

- Mean determines skewness.
- Mean, median, mode all the same = Symmetric.